

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of

Expanding the Economic and Innovation
Opportunities of Spectrum Through Incentive
Auctions

Docket No. 12-268

COMMENTS OF BROADCOM, CSR AND MARVELL

INTRODUCTION

The companies listed limit their comments in this document to issues surrounding unlicensed white space channels. We support the Commission's goals for unlicensed use of the unused TV band White Spaces (TVWS) spectrum. We believe that the additional bandwidth and propagation characteristics of TVWS spectrum will significantly augment wireless local area network (WLAN) user experiences by reducing outages, improving coverage and providing opportunities for new applications that are not well-served using the 5GHz spectrum or the congested 2.4 GHz spectrum.

I. SUFFICIENT TVWS UHF SPECTRUM SHOULD BE AVAILABLE AND USABLE FOR UNLICENSED USE IN ALL GEOGRAPHICAL LOCATIONS

We support the Commission's proposals on allowing unlicensed use as described in paragraphs 234, 235, 237 and 238 in the NPRM, namely, using the guard bands/Duplex Gap, channel 37 and the two channels currently reserved for wireless microphones, respectively.

Ensuring a minimum number of quality channels (having power levels on par with current TVWS regulations for personal portable use) across a nationwide area is much more important to efficient and effective use than having many channels in some areas and no channels in some other (i.e., urban) areas.

The [IEEE LAN/MAN](#) Standards Committee ([IEEE 802](#)) is in the process of finalizing the 802.11af specification, a new WLAN standard designed to operate in TVWS 6 MHz channels according to current FCC rules. However, in order to guarantee success in the market, we believe that at least some useful amount of spectrum should be available in the largest metropolitan areas.

II. THE COMMISSION SHOULD SERIOUSLY CONSIDER THE FOLLOWING CHANNEL ALLOCATION PARAMETERS

The Commission has described several approaches for unlicensed operation in which IEEE 802.11 devices may be able to operate in the guard bands/Duplex Gap, channel 37 and channels reserved for wireless microphones. We would like to emphasize the following:

1. To the extent that all approaches are equally feasible (band plan Figures 10, 12 and 15 in the Commission's NPRM) and yield a similar amount of unlicensed channels, it is important to also minimize the number of filters that will be required to reduce interference of unlicensed devices to licensed devices such as TV receivers, channel 37 devices and cellular receivers.
2. Making channel 37 and the wireless microphone channels available for unlicensed operation would be of enormous value. Having a fixed, known channel location for unlicensed devices can considerably reduce initial scanning time and power consumption.

We design our equipment to successfully share spectrum with incumbent users in channel 37 and channels set aside for wireless microphone.

3. Operation of unlicensed devices in guard bands, especially near cellular uplink and in the Duplex Gap, may experience high interference from cellular devices. We would like to encourage the FCC to subject these new licensed devices to the same tight transmit filtering currently required for unlicensed devices.
4. Currently, the FCC limits operation in adjacent channels for TVWS devices. This has partially to do with incumbent receivers' performance. Ensuring better adjacent channel rejection of cellular devices operating in this new band will allow for reliable operation of unlicensed devices in the guard bands (downlink and uplink) and Duplex Gap, with similar transmit power as in current FCC TVWS rules.

CONCLUSION

We would like to thank the FCC for promoting allocation of new frequencies under 1GHz for unlicensed use. Ensuring an adequate number of channels, without excessive interference present, over a nationwide area is a better way of promoting beneficial spectrum uses than having many channels in some areas but no channels in critical urban areas.

We welcome this opportunity and expect that when the uncertainty of spectrum availability on a nationwide basis is removed, white space products will be widely deployed

Respectfully submitted,

Broadcom Corporation

CSR Technology, Inc.

Marvell Semiconductor